

IN THE CLAIMS:

1. (Cancelled)

2. (Previously Presented) A solar cell module in accordance with claim 36 wherein said one or more solar cells is either a wafer or a thin film and is made from a semi-conductor material.

3. (Previously Presented) A solar cell module in accordance with claim 36 wherein said one or more solar cells is a wafer and is made from a semi-conductor material that is polycrystalline or single crystal silicon.

4. (Previously Presented) A solar cell module in accordance with claim 36 wherein said one or more solar cells is a thin film and is made from a semi-conductor material that is thin film silicon or copper indium gallium diselenide.

5. (Cancelled)

6. (Previously Presented) A solar cell module in accordance with claim 36 wherein the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (A) of said liquid silicone encapsulant composition is from >1:1 to 5: 1.

7. (Cancelled)

8. (Previously Presented) A solar cell module in accordance with claim 6 wherein said liquid silicone encapsulant composition additionally comprises one or more adhesion promoter(s) and/or an anti-soiling agent(s) and/or cure inhibitor(s) and/or a silane of the formula:



wherein R^1 is an alkyl group comprising 1 to 6 carbon atoms, R^2 is selected from the group of an alkoxy group comprising 1 to 6 carbon atoms, an alkyl group comprising 1 to 6 carbon atoms, an alkenyl group comprising 1 to 6 carbon atoms, an acrylic group or an alkyl

acrylic group.

9-11. (Cancelled).

12. (Previously Presented) A solar cell module in accordance with claim 36 wherein the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) is <1:1.

13. (Previously Presented) A solar cell module in accordance with claim 36 wherein said silicone adhesive composition additionally comprises an adhesion promoter and/or a cure inhibitor and/or a silane of the formula:



wherein R^1 is an alkyl group comprising 1 to 6 carbon atoms, R^2 is selected from the group of an alkoxy group comprising 1 to 6 carbon atoms, an alkyl group comprising 1 to 6 carbon atoms, an alkenyl group comprising 1 to 6 carbon atoms, an acrylic group or an alkyl acrylic group.

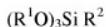
14. (Previously Presented) A solar cell module as set forth in claim 36 wherein said liquid silicone encapsulant composition comprises a resin fraction of between 30% and 50% by weight and said silicone adhesive composition comprises a resin fraction of between 20% and 30% by weight.

15. (Previously Presented) A solar cell module in accordance with claim 14 wherein said silicone encapsulant cures without releasing volatiles.

16. (Previously Presented) A solar cell module in accordance with claim 14 wherein said silicone encapsulant and/or silicone adhesive exhibits a light transmission substantially equivalent to glass.

17. (Previously Presented) A solar cell module in accordance with claim 14 wherein said one or more solar cells is pre-treated prior to adhesion and/or encapsulation with a silane of

the formula:



wherein R^1 is an alkyl group comprising 1 to 6 carbon atoms, R^2 is selected from the group of an alkoxy group comprising 1 to 6 carbon atoms, an alkyl group comprising 1 to 6 carbon atoms, an alkenyl group comprising 1 to 6 carbon atoms, an acrylic group or an alkyl acrylic group.

18. (Withdrawn-Currently Amended) A continuous solar cell module encapsulation process comprising the steps of uniformly applying by spraying, coating or dispensing a predetermined volume of a silicone adhesive composition onto a rigid or flexible superstrate, disposing one or more solar cells on the silicone adhesive, uniformly applying by spraying, coating or dispensing a predetermined volume of a liquid silicone encapsulant composition onto the one or more solar cells and curing the silicone adhesive composition and the liquid silicone encapsulant composition thermally or by infrared radiation,

wherein the silicone adhesive composition has a viscosity of from 100 to 2,000 mPa.s at 25°C before curing and comprises is formed from:

(Ai) 100 parts by weight of a first liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule;

(Bi) 20 to 40 parts by weight of a first silicone resin containing at least two alkenyl groups;

(Ci) a first cross-linking agent in the form of a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) is from 0.1:1 to 1:1; and

(Di) a first hydrosilylation catalyst wherein the amount of metal in the hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (Ai); and

the silicone adhesive composition cures to form a silicone adhesive—having—a viscosity of from 100 to 2,000 mPa.s at 25°C;

wherein the liquid silicone encapsulant composition comprises is formed from:

(A) 100 parts by weight of a second liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule and a viscosity of from 100 to 10,000 mPa.s at 25°C;

(B) 20 to 50 parts by weight of a second silicone resin containing at least two alkenyl groups;

(C) a second cross-linking agent in the form of a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (A) is >1:1; and

(D) a second hydrosilylation catalyst wherein the amount of metal in the hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (A); and

~~wherein the first and second liquid diorganopolysiloxanes, silicone resins, cross linking agents, and hydrosilylation catalysts may be the same or different from each other, respectively.~~

19. (Cancelled)

20. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein the silicone adhesive composition and the liquid silicone encapsulant composition are cured in a continuous oven.

21. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein the layer resulting from the liquid silicone encapsulant composition is a uniform thin film coating having a thickness ranging from 20 µm to 1200 µm.

22. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein the silicone adhesive composition is applied on to the rigid or flexible superstrate and cured prior to the introduction of the liquid silicone encapsulant composition.

23. (Cancelled)

24. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein the means of applying the liquid silicone encapsulant composition is adapted such that the liquid silicone encapsulant composition is applied in a uniform bubble-free or substantially bubble-free film in the solar cell module.

25. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein the uniform application of the liquid silicone encapsulant composition results in a layer of the liquid silicone encapsulant composition and deposition of the one or more solar cells into the layer of the liquid silicone encapsulant composition is by automatic placement.

26. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein a thermoplastic or thermo-elastomeric material is applied to form a frame surrounding a cured solar cell module to protect edges of the cured solar cell module from water ingress.

27. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein a silane of the formula:



wherein R^1 is an alkyl group comprising 1 to 6 carbon atoms, R^2 is selected from the group of an alkoxy group comprising 1 to 6 carbon atoms, an alkyl group comprising 1 to 6 carbon atoms an alkenyl group comprising 1 to 6 carbon atoms, an acrylic group or an alkyl acrylic group; is utilised to pre-treat the one or more α -solar cells prior to adhesion and/or encapsulation.

28-30. (Cancelled).

31. (Previously Presented) A solar cell module in accordance with claim 2 wherein said semi-conductor material is selected from the group consisting of crystalline silicon,

polycrystalline silicon, single crystal silicon, thin film silicon, amorphous silicon, semi crystalline silicon, gallium arsenide, copper indium diselenide, cadmium telluride, copper indium gallium diselenide, and mixtures thereof.

32. (Previously Presented) A solar cell module in accordance with claim 36 wherein said liquid silicone encapsulant composition cures without releasing volatiles.

33. (Previously Presented) A solar cell module in accordance with claim 36 wherein said liquid silicone encapsulant composition exhibits a light transmission substantially equivalent to glass.

34. (Previously Presented) A solar cell module in accordance with claim 36 wherein said one or more solar cells is pre-treated prior to encapsulation with a silane of the formula:



wherein R^1 is an alkyl group comprising 1 to 6 carbon atoms, R^2 is selected from the group of an alkoxy group comprising 1 to 6 carbon atoms, an alkyl group comprising 1 to 6 carbon atoms, an alkenyl group comprising 1 to 6 carbon atoms, an acrylic group or an alkyl acrylic group.

35. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 wherein the liquid silicone encapsulant composition is applied using a curtain coater.

36. (Currently Amended) A solar cell module comprising:

(1) a rigid or flexible superstrate;

(2) a silicone adhesive disposed on said superstrate having a viscosity of from 100 to 2,000 mPa.s at 25°C and comprising formed from a silicone adhesive composition that has a viscosity of from 100 to 2,000 mPa.s at 25°C before curing and comprises that is formed from;

(Ai) 100 parts by weight of a first liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule,

(Bi) 20 to 40 parts by weight of a first silicone resin containing at least two alkenyl groups,

(Ci) a first cross-linking agent in the form of a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (Ai) is from 0.1:1 to 1:1, and

(Di) a first hydrosilylation catalyst wherein the amount of metal in said hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (Ai); and

(3) one or more solar cells disposed on said silicone adhesive; and

(4) a silicone encapsulant disposed on said one or more solar cells and formed from comprising a liquid silicone encapsulant composition comprising that is formed from;

(A) 100 parts by weight of a second liquid diorganopolysiloxane having at least two Si-alkenyl groups per molecule and a viscosity of from 100 to 10,000 mPa.s at 25°C,

(B) 20 to 50 parts by weight of a second silicone resin containing at least two alkenyl groups,

(C) a second cross-linking agent in the form of a polyorganosiloxane having at least two silicon-bonded hydrogen atoms per molecule, in an amount such that the ratio of the number of moles of silicon-bonded hydrogen to the total number of moles of silicon-bonded alkenyl groups in component (A) is >1:1, and

(D) a second hydrosilylation catalyst wherein the amount of metal in said hydrosilylation catalyst is from 0.01 to 500 parts by weight per 1,000,000 parts by weight of component (A); and

wherein said first and second liquid diorganopolysiloxanes, silicone resins, cross-linking agents, and hydrosilylation catalysts may be the same or different from each other, respectively.

37. (Cancelled)

38. (Previously Presented) A solar cell module in accordance with claim 36 wherein said silicone adhesive exhibits a light transmission substantially equivalent to glass.

39. (Previously Presented) A solar cell module in accordance with claim 36 that is free of ethylene-vinyl acetate (EVA) copolymer.

40. (Withdrawn-Previously Presented) A continuous solar cell module encapsulation process in accordance with claim 18 that is free of ethylene-vinyl acetate (EVA) copolymer.